

DEPARTMENT OF INDUSTRIAL AND SYSTEMS ENGINEERING
ISEN 303: ECONOMIC ANALYSIS OF ENGINEERING PROJECTS

REQUIRED or ELECTIVE: required course

CATALOG DESCRIPTION (3-0) Credit 3

Principles of economic equivalence; time value of money; analysis of single and multiple investments; comparison of alternatives; capital recovery and tax implications; certainty; uncertainty; risk analysis; public sector analysis and break-even concepts.

PREREQUISITES

MATH 152

PROFESSIONAL COMPONENT

This course introduces students to the effective use of economic analysis techniques and their application to the evaluation and selection of project alternatives.

COURSE LEARNING OUTCOMES

At the end of the course, students should be able to

- choose and calculate the appropriate measure(s) of merit,
- understand and use the time value of money concepts,
- understand economic analysis techniques, and
- build spreadsheet models that will aid performing economic analysis.

TEXTBOOK

Engineering Economic Analysis; 10th Edition, D. G. Newnan, J. P. Lavelle, and T.G. Eschenbach; McGraw-Hill, 2008; ISBN 978-0-07-340129-4.

TOPICS COVERED

1. Making Economic Decisions
2. Engineering Costs and Cost Estimating
3. Interest and Equivalence
4. Interest Formulas
5. Present Worth
6. Annual Cash Flow Analysis
7. Rate of Return Analysis
8. Choosing the Best Alternative
9. Payback Period
10. Uncertainty in Future Events
11. Depreciation
12. Income Taxes
13. Replacement Analysis

- 14. Inflation and Price Change
- 15. Selection of a Minimum Attractive Rate of Return
- 16. Economic Analysis in the Public Sector

CLASS AND LAB SCHEDULE

One hundred and fifty minutes of lectures per week; either three days a week at 50 minutes per day or two days a week at 75 minutes per day. No laboratory component.

CONTRIBUTION TO MEETING REQUIREMENTS OF CRITERION 5:

Subject	Semester hrs	Subject	Semester hrs	Subject	Semester hrs
Mathematics		Engineering Science	3	General	
Basic Science		Engineering Design			

RELATIONSHIP OF COURSE TO PROGRAM OUTCOMES:

- A. Ability to apply knowledge of mathematics, science and engineering
- E. Ability to identify, formulate and solve engineering problems
- K. Ability to use the techniques, skills and modern engineering tools necessary for engineering practice

PREPARED BY: Don Smith

Date April 7, 2010